2017

Nebraska, USA: Wonderful fossils, natural history museums and public art depicting fossils

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Deposits

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Geo junkets Iceland: Part 1

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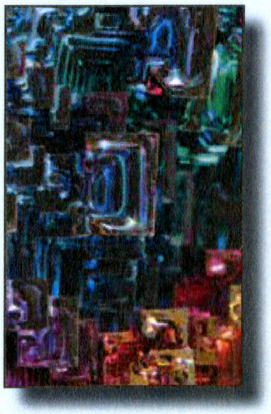


The cover picture shows crystals of the element bismuth, which chemically resembles arsenic and antimony. Elemental bismuth sometimes occurs naturally, although its sulphide and oxide form important commercial ores. It is the most naturally diamagnetic element (that is, it is repelled by a magnetic field) and has one of the lowest values of thermal conductivity among metals. These crystals are man-made using a process in which the raw natural mineral is melted at a very high temperature and then allowed to crystallise. Once cooled to a solidified state and exposed to the atmosphere, the crystal form reacts with the oxygen to produce these beautiful colours.

National Fossil Collecting code

In each issue of *Deposits*, we publish a reminder of the National Fossil Collecting code. This is a comprehensive guidance for all and we strongly advise that it should be followed. It is also important that it is recognised that various locations may change their geography, access and suitability due to a number of factors, including erosion and regional council regulations, and (following the code) it is imperative that tide times are fully researched in advance of a visit to the coast. From time to time, we do receive emails or calls from people complaining to us about the minority who they claim have little respect for coastal areas, private property or their own safety. Therefore, we must point out that we strongly discourage any reader to disrespect these codes and that SSSI locations must be respected. Indeed, it saddens us to think that any person might disrespect these codes and laws.

The National Fossil Collecting code is promoted and displayed on the following sites; www.ukfossils.co.uk, www.discoveringfossils.co.uk and www.ukafh.com.

Nebraska, USA: wonderful fossils, natural history museums and public art depicting fossils

Professor Robert F Diffendal, Jr (USA)

Nebraska is known by vertebrate palaeontologists as the place in North America where there is a very complete Cenozoic geologic record of mammalian evolution over the last thirty-five million years or so. All you have to do is visit any of the many major natural history museums in the USA and in many countries around the world, including the UK, to see fossil skulls, articulated skeletons and large slabs of rock containing bones of fossil mammals from Nebraska to verify this assertion.

Nebraska is also the site of Cretaceous rocks containing the oldest known Cretaceous fossil flower and many other parts from fossil plants. It also contains dinosaur footprints and trackways, and skeletons of marine plesiosaurs, mosasaurs and large marine fish, as well as terrestrial and marine invertebrate fossils and marine microfossils.

Upper Carboniferous rocks exposed at the surface in parts of south-eastern Nebraska have yielded fossil terrestrial plant fossils, marine stromatolites and other marine plant fossils, marine invertebrates, fish and even some fossil bones of amphibians and early reptiles.

All in all, Nebraska is a vast storehouse of wonderful fossils that continues today to yield them up to collectors, both professional and amateur. These fossils can be found on both private and public lands, and in state and federal parks and museums.

To match this geological heritage, Nebraska (a large state in area with a small population) has a wonderful natural history museum - the University of Nebraska State Museum (UNSM) - on the main campus of the University of Nebraska-Lincoln in Lincoln, Nebraska. The current museum building - Morrill Hall - was constructed starting in 1925 and completed in 1927. The most well-known hall in the museum is Elephant Hall (Fig. 1). Here, fossil proboscideans, mostly from Nebraska, are displayed along the main axis of the building. Other parts of the museum include galleries of dinosaurs, of fossil horses, rhinos and camels, of Mesozoic and Palaeozoic life (Fig. 2), and modern floras and

Fig. 1. Elephant Hall (courtesy of University of Nebraska State Museum).

Fig. 2. Fossil trilobite (*Ameura missouriensis*) from the Pennsylvanian (Upper Carboniferous) rocks of southeastern Nebraska (courtesy of Nebraska Conservation and Survey Division).

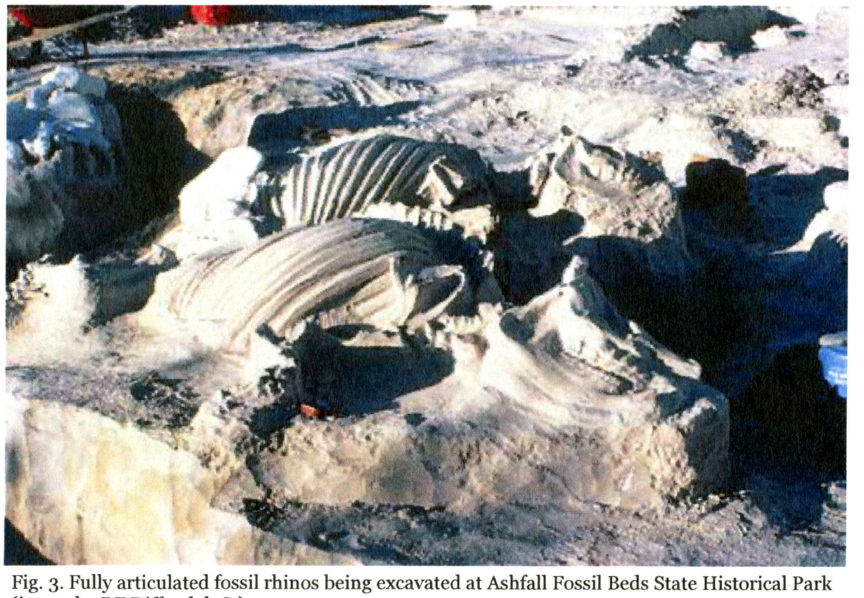


Fig. 3. Fully articulated fossil rhinos being excavated at Ashfall Fossil Beds State Historical Park (image by RF Diffendal, Jr).

faunas from Nebraska and around the world.

UNSM has two satellite museums - Ashfall Fossil Beds State Historical Park (known for its *in situ* fully articulated skeletons of Late Miocene fossil rhinos, horses and other vertebrates preserved in volcanic ash – the only such site in North America; see Fig. 3) and the Trailside Museum at Fort Robinson State Park in the extreme north-west of Nebraska. Both of these fine museums, as well as a small museum at the Agate Fossil Beds National Monument in western Nebraska (Fig. 4), have outstanding displays of fossils from Nebraska for people to study and to marvel over.

The importance of these fossils to the people of Nebraska is demonstrated further by the mosaics of many fossil plants and animals, mostly from Nebraska and nearby states, depicted on the floor of the rotunda of the State Capitol. They were created by the famous artist, Hildreth Meière, in the late 1920s, when the building was being constructed. These mosaics have been well described previously by Neale Monks in *Deposits* in Issue 21 (*Dinosaurs at the Nebraska State Capitol*) in 2010. Partly as a result of reading Neale's work, I wrote two books about these in 2015: one a colouring and activities book for children of all ages (*Fossils on the Floor In the Nebraska State Capitol: A Coloring and Activities Book*); and the other a longer history of the development of the ideas for the mosaic guilloche and the colour drawings created by the UNSM director in 1927, Edwin H Barbour, for use by Meière as models for creation of her designs for the mosaics in that year (*Fossils on the Floor· Mosaics in the Rotunda of the Nebraska State Capitol*). Both of these books are reviewed opposite.

If you have the chance to visit the United States, plan to come to Nebraska if you are interested in seeing wonderful fossil plants and animals in museums and at our state and federal parks. You will certainly enjoy seeing the fossils and meeting the people.

About the author

Dr Robert F. Diffendal, Jr is Professor Emeritus at the University of Nebraska and Curator of Invertebrate Paleontology at the University of Nebraska State Museum.

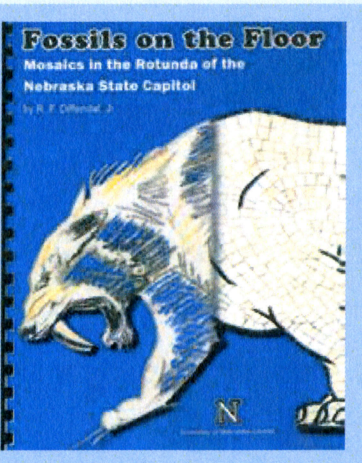
Book reviews

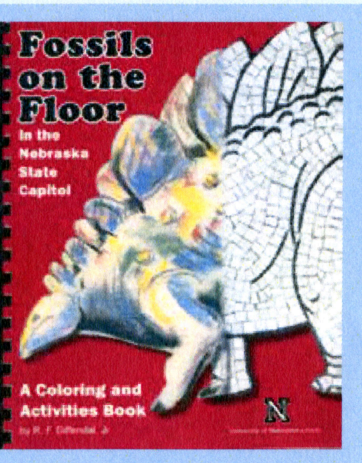
Jon Trevelyan

Fossils on the Floor: Mosaics in the Rotunda of the Nebraska State Capitol

and

Fossils on the Floor in the Nebraska State Capitol: A Coloring and Activities Book by Robert F Diffendal Jr





As you can see from the article opposite by the author of these two books, Nebraska has an excellent geology record, which is celebrated by some fine mosaics at the Nebraska State Capitol. When the building was being constructed, and at the request of Prof Hartley Burr Alexander of the University of Nebraska Philosophy Department and from drawings by his colleague Dr Erwin H Barbour (former director of the University of Nebraska State Museum), the artist, Hildreth Meière, was asked to create a series of mosaics. These are now set out on the floor of the rotunda for all to see.

To publicise and illustrate these mosaics, Robert Diffendal has produced two short books. The first (Mosaics in the Rotunda) gives an interesting description of who produced them, why they were commissioned and how they were constructed - from concept to design. It also describes and provides full colour photos of the original concept drawings and how the ideas were translated into the mosaics. There is also an appendix containing definitions and additional information.

And the second is a children's colour and activities book to use when visiting the rotunda. In simple language, it explains what to look out for, how to look at the mosaics and what they are portraying. For example, if the mosaic illustrates a crinoid, these sea creatures are explained in the context of the mosaic. The black and white photos and illustrations can be coloured in and, given that the animals and plants covered range from ammonites to tree ferns and mastodons to pines, there is plenty that younger visitors can understand and plenty for them to learn about on subjects they do not yet understand.

All-in-all, some excellent little books, which can be bought on Amazon.com or by ordering from the website of the Nebraska Maps and More store at http://nebraskamaps.unl.edu.

Fossils on the Floor: Mosaics in the Rotunda of the Nebraska State Capitol by Robert F Diffendal Jr, University of Nebraska-Lincoln, Nebraska (2015). 79 pp., softback, ISBN: 978-1-56161-045-7

Fossils on the Floor in the Nebraska State Capitol: A Coloring and Activities Book by Robert F Diffendal Jr, University of Nebraska-Lincoln, Nebraska (2015). 60 pp., softback, ISBN: 978-1-56161-046-4

Fig. 4. The two hills on the horizon left of center in the image are University Hill (left) and Carnegie Hill (right). One fossil quarry site on Carnegie Hill is at the base of the vertical slope on the right side of the hill in this view. (Image by RF Diffendal, Jr.)

Scan the QR Code to visit the University of Nebraska State Museum website.